MODULE 7

MONITORING PROJECT SUSTAINABILITY

MONITORING PROJECT SUSTAINABLITY

OBJECTIVES:

- Provide an overview of appropriate operations, management, and monitoring programmes and procedures for sustainable tourism facilities.
- Introduce OM&M (Operations Maintenance, & Monitoring), which is a modification of the familiar acronym - O&M (Operations & Maintenance).

OVERVIEW:

- The Operations, Maintenance and Monitoring (OM&M) approach defined.
- Special OM&M issues for the Wider Caribbean Region.
- Environmental management: a maturing programme in the hotel industry, environmental culture in hotels, green hotel as good business.
- Resource conservation: Programme for Belize- A Case Study.

INTRODUCTION

The true test of the sustainability of a facility begins in the post-occupancy period. This module will provide an overview of appropriate operations, management, and monitoring programmes and procedures for sustainable tourism facilities. A revision of the traditional post-occupancy operations and maintenance (O&M) approach is introduced, offering a modification of the familiar acronym "O&M" to "OM&M".

OPERATIONS, MAINTENANCE, AND MONITORING (OM&M)

WHAT IS OM&M?

Those familiar with the traditional facility development process will recall that primary importance is placed on the design and construction of the facility with the opening ceremonies signaling the "completion" of the latter. The post-occupancy operations and maintenance (O&M) phase of the development is also recognized as critically important. However, it is quietly felt to be a perfunctory, never-ending drudgery of "fix-it" projects. In this regard, the role of the Facility Manager and maintenance exercises are seen as a set of procedures, undertaken periodically, with the futile goal of keeping the facility "looking as bright and shiny... as the day it opened."

Sustainable development forces a new view of traditional O&M. By definition, it makes us view the facility as an evolving entity that should be able "to renew itself and still maintain the pool of resources needed by future users to continue the renewal process." In the U.S. National Park Service's groundbreaking document "Guiding Principles of Sustainable Design", operations and maintenance are defined in the following way:

"The role of facility operations is to consistently maintain quality visitor experiences without the depletion of resources and to promote environmental and cultural resource awareness and education".

In this regard, the success of the facility is not determined at the opening dedication, but in the days and years following its commissioning.

Sustainability also forces us to focus on the methods and tools needed to determine what level of success is being achieved over time. As a result, monitoring (and the tools needed to conduct it) takes on a new level of importance in the life of the facility.

THE PRIMARY FUNCTIONS OF OM&M

General Considerations

Bearing in mind the fact that the operation and maintenance of a tourism facility is closely linked to planning, design, and construction of the facility, operation and maintenance needs and concerns must be incorporated into the planning, design, and construction process. Tourism facilities should be designed using appropriate technology necessary to meet their functional needs related to:

- Operations
- Maintenance
- Monitoring

In this process all members of management and staff have a critical role to play in O&M&M.

Special Monitoring "tools"

These may include:

- Customized Spread Sheet Programmes for Data Collection/Organization (e.g. Excel, Lotus and Quattro Pro).
- Geographic Information Systems (GIS).
- Computer Assisted Drafting and Design (CADD).
- Maintenance Management Systems.

SPECIAL OM&M ISSUES FOR THE CARIBBEAN

The maintenance of tourism facilities in the tropics is faced with special challenges. These include the harsh tropical sun, rain, and salt spray.

The likelihood of hurricanes, earthquakes, floods, storm surge and similar potential hazards negatively impacting tourism facilities in the Caribbean is very real, and appropriate disaster mitigation plans must therefore be prepared and in a state of readiness for implementation.

ENVIRONMENTAL MANAGEMENT: A MATURING PROGRAMME IN THE HOTEL INDUSTRY

In the past five years, the international and regional hotel industry organizations, including the Caribbean region, have developed initial environmental management programmes which primarily re-orient the standard hotel operations and management programmes to address the full range of issues related to environmental protection, stewardship, and planning. The following are highlights from environmental programmes of the International Hotels Environment Initiative (IHEI); the Caribbean Hotel Association (CHA); and Canadian Pacific Hotels and Resorts (CPH&R).

HOW TO USE THE ACTION PACK

The following refers to the IHEI's "Environmental Action Pack for Hotels" which aims at introducing environmental management as an extension to the daily running of the hotel business. The Action Pack has five main parts:

1. GETTING STARTED
2. ACTION CHECKLISTS
3. OPERATING YOUR BUSINESS ENVIRONMENTALLY
   - Motivation
   - Planning Action
   - Making it Happen
   - Reviewing Progress
4. DEVELOPING THE ACTION
   - Energy
   - Solid waste
   - Water
   - Effluent & emissions
   - Contractors and suppliers
   - Business issues

A description of each of the above mentioned areas is given of the main issues affecting hotels in order to (a) carry out detailed review of the chosen priority action areas, (b) prepare a plan of action, and (c) monitor progress.

5. FURTHER HELP

INTRODUCING AND DEVELOPING AN ENVIRONMENTAL CULTURE IN YOUR HOTEL

The following is a summary of main issues addressed by IHEI's "Environmental Management for Hotels":

Introduction:

Establishing a successful environmental programme requires both a systematic approach to improve day-to-day operations behind the scenes and to communicate your environmental message to all stakeholders in your hotel enterprise: staff, guests, business partners and the local community. The hotel industry can be a tremendous force for change.

Establishing systems and policies:

There are various different models for establishing such systems, but they typically cycle through each of the following stages:

1. Policy
2. Reviews
3. Objectives
4. Audits

Conducting an environmental review:

A review should address the main environmental impacts of your hotel and opportunities for reducing them. This may involve:

- Waste avoidance, re-use, recycling and disposal
- Energy management - including the choice of the fuel and scope for savings.
- Water use.
- Hazardous materials.
- How your activities affect local habitats and the landscape.

Setting targets and auditing progress:

- Determining whether the target applies to all utilities including water, or just one.
- Determining whether you mean a 5 percent reduction in consumption or in cost.
- Determining when you plan to meet the target.
- Determining who will be responsible for the changes.

Environmental working group:

- Appoint a working group, whose job is to inform, support, and motivate the entire staff. This person will:
  - Implement the policy
  - Ensure that objectives are set
  - Keep the programme moving forward
  - Encourage everyone to get involved
  - Supervise the auditing of targets
  - Collate information, ideas and results and communicate them throughout the hotel.

- Communicate results of the environmental programme externally, to local authorities, local residents, other hotels and suppliers.

- Membership of the group should include representatives from key departments of engineering, housekeeping, food and beverage, etc., and their role is to:

  - Set a positive example concerning environmentally benign use of resources
  - Help identify solutions to any immediate environmental problems
  - Ensure that appropriate suggestions from staff are put into effect
  - Agree with departmental staff objectives and targets for the environmental programme
  - Work with the champion to review current practices, act to achieve objectives and audit the results of the programme.

- **Motivation:**

  In order for the environmental working group and other staff to be effective, the following steps will need to be taken:

  - Raise awareness
  - Build commitment
  - Provide support
  - Reward and recognize efforts
  - Celebrate success
  - Practical partners

- **Business partners**

- **Guests**

- **Community action:**

  - Urban beautification campaign
  - Beach park clean-up
  - Alternative energy sources
  - Sponsorship of programmes which may include:
    - Organic farming, perhaps in combination with other hotels
    - Local environmental group activities (e.g. you could offer the use of the hotel's facilities to publicize the activities)
    - Schools and youth groups
    - Training films
    - Artists and entertainers (could work with the local community arts council or equivalent).
    - Environmental Publications.

THE GREEN HOTEL IS GOOD BUSINESS

The following is taken from the CHA's "Environmental Management Tool Kit for Caribbean Hotels":

- PROTECT YOUR INVESTMENT

  - Improve and manage your coastal water quality
  - Develop beach management programmes
  - Develop landscaping programmes to enhance your environmental image.

- ENHANCE YOUR IMAGE

  - Evaluate and improve sewage treatment facilities
  - Design wastewater treatment programmes
  - Improve the management of solid waste disposal systems.

- SAVE PLANET EARTH

  - Evaluate the use and disposal of chemicals at you hotel
  - Implement energy efficient practices
  - Develop disaster management strategies
  - Train staff to strengthen environmental management capability.

- A hotel General Manager should assume overall responsibility for the environmental soundness of the hotel. The general manager's goal is to:

  - Establish environmentally sound hotel operations
  - Achieve cost savings through Energy and Water Conservation
  - Reduce production of waste disposal
  - Establish appropriate treatment systems for Sewage and Solid Waste.

TWELVE STEPS TO A GREENER PLANET

The following is a summary from CPH&R principles:

1. Reduce; Reuse; Recycle
2. Eliminate Excessive and Unnecessary Packaging
3. Eliminate All Aerosols & Phosphates
4. Buy Recycled Paper Products Wherever possible
5. Recycle Everything Possible and Practical
6. Replace Incandescent Lights with Florescent
7. Save Our Precious Water
8. Buy Organic Foods Wherever Possible
9. Establish a Guest Recycling Programme
10 Redistribute Used Amenities to Charity
11. Establish a Toxic Waste Disposal Programme
12. Establish a Green Corporate Purchasing Policy.

RESOURCE CONSERVATION AND MAINTENANCE PROGRAMME (RCMP)

PROGRAMME FOR BELIZE: A Case Study

The following is an overview of the Resource Conservation and Maintenance Programme (RCMP) for "Programme For Belize", an environmental NGO in Belize, Central America. The RCMP is offered as a case study "success story" given the unique and successful structure and implementation of the programme, referring to a particular site "La Milpa Station".

The RCMP is an ongoing visitor orientation, staff training, and sustainable systems operations and maintenance programme composed of a series of workbooks and guide documents, each tailor-made for the use group.

The RCMP currently is used by all management and staff of "Programme for Belize" to ensure continued awareness of system operations and maintenance requirements. The workbooks are reviewed in all quarterly staff meetings to help organize a collective review and update of all sustainable systems.

RCMP Goal:

To protect the La Milpa Station environment and save precious resources by using "The Three R's"

1. Reduce 2. Reuse 3. Recycle

Programme Manual Goal

To guide you through the day-to-day operation of the La Milpa Station RCMP. Through a successful RCMP we can all protect the La Milpa Station environment and save precious resources.

The Key To Programme Success

1. Review this manual on a regular basis. The manual should be a "Living" document which provides friendly assistance from day-to-day.
2. Make sure to ask questions if you are unsure about a procedure.
3. Do your part to make the programme successful every day. Encourage your fellow staff member. Help others to properly support the programme. The RCMP will only be as successful as everyone makes it!!

The following are the main components of the Resource Conservation and Maintenance Programme, with a more detailed sample of text provided for "Renewable Energy Systems":

RENEWABLE ENERGY SYSTEMS

Renewable energy programme objective:
To meet the energy needs of the La Milpa Station with renewable energy technologies which are non-polluting, reliable, and reduce ongoing operating costs.

Systems description:

"Hybrid" Solar Electric/Diesel Generator Power Supply System.

The Components:

La Milpa's Hybrid Power Supply System is composed of four major parts:

1. the Solar Electric (Photovoltaic - PV array) power supply system;
2. the diesel generator power supply (10 killowatt Gen-Set);
3. Battery Power Storage and Power Control System; and
4. Power Distribution System (cables, wires, outlets).

How it Works:

Electric power is generated by the solar electric (PV) array and Diesel Gen-Set and directed through power cables to a battery bank where the power is stored for day and night (24 hr.) use for the various Station activities. Before the power reaches the

batteries, all electric power passes though a Safety Switch (which allows the power to be shut off safely when necessary) and then a Controller (which protects the batteries from overcharging). The power is then directed through an inverter which converts the power from Direct Current (DC) to Alternating Current (AC) (which is the same form of power supplied by electricity providers) and then on to the "House" Circuit Panel, which safely directs power to the various power requirements of the building (lights, water pumping, kitchen, etc.)

How to Maintain the System:

The Hybrid Power Supply System is relatively maintenance-free. However, there are a few things that all staff and visitors should keep in mind. Maintenance Staff is referred to a detailed maintenance information Appendix.

SOLID WASTE MANAGEMENT PROGRAMME

WASTE REDUCTION PROGRAMME

- products, fixtures, appliances, bulk purchasing.

WASTE REUSE PROGRAMME

- purchasing guide.

WASTE RECYCLING PROGRAMME

- reuse plastic, metal, glass, paper, encourage programmes or in-house reuse and supply excess to adjacent communities for reuse.

COMPOSTING PROGRAMME

- Composting toilets
- Station-wide composting system
- Collection of kitchen and yard waste

ENERGY CONSERVATION PROGRAMME

- **Lighting programme**

  Fixture/bulb selection
  Product Selection Sheets
  Maintenance Selection Sheets
  Check List

- **Appliance programme**

  Monitoring use
  Maintenance Schedule Sheets
  Check Lists

WATER CONSERVATION PROGRAMME

Fixture selection and maintenance and water use monitoring

- Product Identification Sheets
- Maintenance Schedule Sheets
- Check Lists

GREY WATER PROGRAMME

System description

- Maintenance Schedule Sheets
- Check Lists

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APPENDIX 1
COURSE EVALUATION

After any form of training course, it is important to determine the relevance and success of the course. The main reasons for doing this are to determine:

- the usefulness of the course to the participants
- the relevance of the content of the course to participants' work
- the adequacy of the level of organization
- the comfort of the facilities
- the clarity of audio-visual material
- the accuracy of the information
- the quality of the presentations
- the expertise of the speakers

A course evaluation will help to determine whether the course was as useful as expected by the organizers, and if not, it will assist in improving future courses by addressing particular issues that were reflected on negatively by the participants.

Course evaluation sheets are best presented at the beginning of the workshop with the introductory material so that participants have time to read it through and answer questions or make notes as the workshop proceeds. It is best to arrange a box or file for the participants to leave their questionnaires at the end of the workshop, rather than requesting that they be sent by mail or fax at a later date. Participants should be given the option of signing or completing evaluations anonymously.

The design of the evaluation sheet should be simple and straight forward with direct questions that require straight-forward answers. The questions should be designed so that answers can be:

1. yes or no
2. not applicable (N/A)
3. on a scale of 1 through to 5, with 1 being the lowest score
4. on a range of opinions - strongly agree, agree, disagree, strongly disagree
5. too short, just right, too long

The questionnaire can be designed to ask all types of questions which give answers in all or some of the categories above. The type of response presented is dependent on the type of question asked and how much information the questionnaire evaluator requires.

For example the phrase '**The course length was appropriate**' is best served by the answer

1. Too long 2. Too short 3. Just right

rather than

1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

At the end of the questionnaire it is useful to leave at least one-half a page for participants to write their own input which can be requested as:

- Comments
- Observations
- Suggestions

If an assessment of presenters is necessary for your feedback this can be included and the presenters can be identified by:

- name
- topic
- time slot

An example of how the questionnaire or evaluation sheet can be organized, as well as examples of types of question is given below:

Section 1: Logistics

The advanced mailing gave adequate information to the participants:
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

Section 2: Course content

The course was well organized
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

The stated objectives were met
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

Section 3: General Overview

How valuable did you find the course?
1 2 3 4 5

The presentations were
1. Too long 2. The right length 3. Too short

Section 4: Results

Did the course provide solutions to existing problems?
1 2 3 4 5

Was the schedule of activities clear?
1 2 3 4 5

Section 5: Scheduling facilities

The time of year selected was appropriate
1 2 3 4 5

The refreshments were satisfactory
1 2 3 4 5

The audio-visual materials were appropriate
1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. N/A

The course length was
1. Too long 2. Too short 3. The right length

Section 6: Observations

1. How will you utilize the information that you have acquired?

2. What were the weak points of the course?

3. What were the strong points of the course?

Assessment of the evaluation sheets or questionnaires can be done by a general review of the answers and comments, or can be more detailed by collating all the responses to each question individually and reporting the results as a percentage of the total participants. The latter form is far more useful as statistical analysis can be performed on the data generated and the success of the course can be quantified as well as qualified. If proceedings or other document is produced from the course, a copy of the questionnaire should be included as well as statistical or graphical representation of the participants' answers and comments.

This information may also be useful as a tool in obtaining support from funding agencies and relevant stakeholders for the convening of similar training courses.

APPENDIX 2
FIELD AND PRACTICAL EXERCISES

FIELD AND PRACTICAL EXERCISES

Field exercises are important in the understanding of the principles underlining environmentally sound siting and design of tourism facilities. Field exercises should be coupled with classroom lectures and included in the programme of training courses. The purpose of doing field exercises is to learn first hand how to assess a site and its resources, to look at the impact of a facility or particular construction activity on the site and on the resources (both negative and positive impacts), to look at possible solutions to potential problems, and to generate discussion on the approach to designing and development.

The following points should be taken into account when planning a field exercise.

Site Visit

- Contact appropriate local resource people for involvement and support.
- Tour of a selected area (e.g. hotel, marina, waterfront or a planned development site) and outline objectives of the visit.
- Length of time for field visit and logistic requirements.
- Selection of concepts and practices for discussion or questions to be answered.
- Preparation of a written report after the trip by participants.
- Inclusion of additional material (photographs, references, results of interviews).

Practical Exercises

To facilitate an understanding of the principles of environmental planning and design of tourism facilities and their application, group exercises may also be designed and delivered during training courses. These should stimulate discussion and provide a venue to experience some of the issues and challenges faced by different stakeholders in the development of sustainable tourism in the Wider Caribbean Region. Examples of such exercises may include, based on previous site visit, identifying shortcomings and positive elements in design, siting of buildings or other facilities, infrastructure and operations. In addition, different groups may be asked to identify and discuss possible solutions to problems identified. In the case of a newly identified site development or an undergoing construction, key ecosystems (e.g. existing wetlands, forest patches, natural lagoon etc.), and cultural resources (e.g. local monuments, community centre) could be assessed, and approaches for their conservation and/or use discussed.

In conjunction with the practical exercise supporting material should be provided. These could include a description of the site, description of the property, map of the area, photographs of the area (including aerial views), copies of existing legislation and copies of relevant workbooks or manuals for reference.

Other Practical Tools

In addition to field and practical exercises, it is recommended to organise informal discussions with relevant planning and regulatory authorities, environmental bodies and tourism industry representatives (e.g. developers, tourism board and development company) from the host country where the course is being held. These discussions would provide valuable opportunities for participants and practitioners from different disciplines to interact regarding planning and design of tourism facilities.

Another useful tool for the sharing of knowledge and experience, is to invite participants to make brief presentations on the status of tourism development, planning and approval practices for facility construction, from their own perspectives, or any other case study they judge relevant to the course objectives.

Both activities above could be organised as part of an evening programme during course delivery, should time be a constraint.

APPENDIX 3
FIGURES AND PHOTO CREDITS

COVER	-	Three Photographs	-	Environmental Solutions Limited
MODULE 1				
Page 6	-	Construction (clip art)	-	Environmental Solutions Ltd. (corel Draw Clip Art)
Page 10	-	Contractor (clip Art)	-	Environmental Solutions Ltd. (corel Draw Clip Art)
MODULE 2				
Page 17	-	Oil refinery (clip art)	-	Environmental Solutions Ltd. (Corel Draw Clip Art)
Page 19	-	Globe on fire (clip art)	-	Environmental Solutions Ltd. (Corel Draw Clip Art)
Page 26	-	Negative impacts of tourism in the Eastern Caribbean	-	Caribbean Conservation Association
Page 25	-	City and Environment (clip art)	-	Graphic + (Corel Draw Clip Art)
Page 30	-	Beach Scene (photo)	-	Graphic + (Corel Draw Clip Art)
MODULE 3				
Page 37	-	Drought (clip art)	-	Environmental Solutions Ltd. (corel Draw Clip Art)
Page 38	-	Cloud/lightning (clip art)	-	Environmental Solutions Ltd. (Corel Draw Clip Art)
Page 38	-	Church (clip art)	-	Graphic + (Corel Draw Clip Art)
Page 39	-	Extension Bridge (clip art)	-	Graphic + (Corel Draw Clip Art)
Page 39	-	Satellite (clip art)	-	Graphic + (Corel Draw Clip Art)
Page 39	-	Refinery (clip art)	-	Graphic + (Corel Draw Clip Art)
Page 45	-	Tornado (clip art)	-	Graphic + (Corel Draw Clip Art)
Page 51	-	Meeting in Session (clip art)	-	Graphic + (Corel Draw Clip Art)
MODULE 4				
Page 59	-	Site Layout (1)	-	Caribbean Infra-Tech, Inc.
Page 59	-	Site Layout (2)	-	Caribbean Infra-Tech, Inc.
MODULE 5A				
Page 74	-	Recycling Bins	-	Graphic + (Corel Draw Clip Art)

MODULE 6

Page 96	-	Group Discussion	-	Graphic + (Corel Draw Clip Art)
Page 97	-	Brick Layer	-	Graphic + (Corel Draw Clip Art)
Page 99	-	Photo of Eco-Resort with Buildings	-	Environmental Solutions Ltd.
Page 100	-	"Hardened" Trailer with PV Array	-	Caribbean Infra-Tech , Inc.
Page 100	-	Solar Panels	-	Graphic + (Corel Draw Clip Art)
Page 100	-	Wind Generators	-	Graphic + (Corel Draw Clip Art)
Page 101	-	Solar Still	-	Florida Solar Energy Centre
Page 101	-	1 & 2 Residence with Septic	-	Caribbean Infra-Tech, Inc.
Page 102	-	Klargester Biodisk Wastewater Treatment System	-	Klargeister Company
Page 102	-	Conserve Water Sign	-	Caribbean Infra-Tech, Inc.
Page 103	-	High Rise Building Section	-	Caribbean Infra-Tech, Inc.
Page 103	-	Building Cross Section	-	Caribbean Infra-Tech, Inc.
Page 104	-	Aerodynamic Roof Shapes	-	Caribbean Infra-Tech, Inc.

MODULE 7

Page 116	-	Mangrove Swamp (Clip Art)	-	Graphic + (Corel Draw Clip Art)